

PRACTICE HACKS⁸

by Noa Kageyama, Ph.D.

"The right kind of practice is not a matter of hours. Practice should represent the utmost concentration of brain. It is better to play with concentration for two hours than to practice eight without. I should say that four hours would be a good maximum practice time—I never ask more of my pupils—and that during each minute of the time the brain be as active as the fingers."

~Leopold Auer

Practice

Why do we do it?

Two reasons

How many people do you know who love to practice? Who wake up bright eyed and bushy tailed every morning, eagerly anticipating a fun-filled day of scales, etudes, excerpts, and concertos in their windowless practice room? I'm betting that you can't think of many.



So why do we practice anyway? What's the point of it all?

We practice to achieve two things.

One, to get better at *playing* our instrument. To develop our knowledge, skills, and abilities, enabling us to play at increasingly higher, more sophisticated, and subtly nuanced levels over time.

Two, to get better at *performing* on our instrument. To improve our ability to fully demonstrate our talents on cue. After all, improved skill and ability don't do much for us, if we only sound great in the practice room.

In this lesson, we are going to work on #1 - getting more done in less time, so you can avoid being stuck in the practice room all day, wondering why everything sounds an awful lot like it did yesterday...and the day before that...and the day before that...

In this lesson, you will...

1. Discover how many hours of practicing per day is optimal (and be able to enjoy the rest of your day guilt-free).
2. Learn how to tell the difference between productive practice and unproductive practice (so you can spend your valuable time getting better instead of spinning your wheels).
3. Use a strategy for prioritizing your practice time (to save yourself from getting so bogged down in the details that the first page sounds 10 times better than the rest of the piece).
4. Accelerate your learning process, thanks to two unique practice models.

Mindless Practice

Easier, but costly

When was the last time you taped yourself practicing to evaluate your use of time? If you are in a music school or conservatory, take a 10-minute walk and eavesdrop on your colleagues. What do you notice about how they practice?



You'll notice that most folks practice on autopilot. It's very common to hear someone play through a piece until they hear something they don't like, then stop, then repeat the passage again until it sounds better, and resume playing until they hear the next thing they aren't happy about, at which point the process begins anew. When asked why they stopped, they might say "*It was out of tune*" or "*It didn't sound very good*" but when pressed for more details, such as which notes specifically were out of tune, in which direction, and by how much, they're not quite sure. This is a sure giveaway that they were practicing mindlessly.

Three problems associated with mindless practice

#1: It wastes your time

Why? Very little concrete learning takes place when we practice this way. This is how we can practice a piece over and over for days and weeks and still not feel like it's gotten much better. In fact, by practicing this way you are actually digging yourself into a hole because what this model of practicing does do is strengthen undesirable habits and tendencies, making it that much harder to correct these in the future.

#2: It hurts your confidence

When you practice mindlessly, you aren't taking the time to consciously identify the critical combination of ingredients it takes to play the way you want. In failing to do so, there is a part of you that realizes you have no idea why sometimes a passage sounds great, and sometimes it doesn't. This will exacerbate your nerves leading up to an important performance.

Real on-stage confidence comes from being able to (a) nail it 5 times out of 5, (b) knowing that this is not just because you are having a good day, but in fact you can nail it on demand because (c) you know exactly what needs to happen from a technique standpoint for you to get it



right the first time.

#3: It's mind-numbingly boring

Practicing mindlessly, and going through the motions with little thought or creativity is a chore. It's about as fun as doing the dishes or folding laundry. That's why it feels like work. So what's the alternative?

Deliberate Practice

The secret of expert performers

Deliberate (aka mindful) practice

Deliberate practice, on the other hand, is goal-directed, problem-solving, solution-focused practice. Instead of mindless trial and error, it's an active and thoughtful process of experimentation with specific goals and hypotheses. It involves taking the time to stop, analyze *what* went wrong, *why* it happened, and *how* one can correct the error permanently.



Put another way, violinist [Paul Kantor](#) once remarked that the practice room should be like a laboratory, where one can freely tinker with different ideas, both musical and technical, to see what combination of ingredients produces the result you are looking for. Read [this](#) short article from STRINGS magazine for more on Kantor's approach.

This is the kind of practice that is the hallmark of expert performers, from music, to sports, to business. [Dr. K. Anders Ericsson](#) is the world's leading authority on the acquisition of expertise and expert performance, whose research is the basis for the so-called "ten-year" or "10,000 hour" rule. He has found that it takes at least 10 years and/or 10,000 hours of *deliberate practice* in order to achieve an expert level of performance in any domain - and in the case of musicians, upwards of 15-25 years to reach an elite world-class level.

It's easy to get distracted by the big numbers, but the real key here is not the *amount* of practice required, but the *type* of practice required to reach an elite level. Practicing any old way just doesn't cut it.

So what does deliberate practice look like?

Let's say you are working on an excerpt, and you are struggling to get the first note to sound like it does in your head. You record yourself, and then listen back.

Was the first note sharp? Flat? Too loud? Too soft? Too harsh? Too short? Too long?



More on Dr. Ericsson's work:

- [Profile](#) in *The Australian*
- [The Making of an Expert](#)
- [The Role of Deliberate Practice in the Acquisition of Expert Performance](#)

Hmm...well, the note was sharp, lacked enough of an attack to begin the note, and wasn't sustained with enough intensity. How sharp was it? A little? A lot? How much longer do you want the note to be? How much more of an attack do you want?

Ok, the note was a little sharp, a bit too short and rather anemic sounding, and required a much clearer attack in order to be consistent with the marked articulation, dynamics, and mood.

So, what did you do that caused the note to be sharp? What do you need to change to make sure the note is perfectly in tune next time? How do you ensure that the length is just as you want it to be, and how do you get a consistently clean and clear attack to begin the note so it begins in the right character?

Now, let's imagine you tweak a few things, record this next attempt, and listen back to the recording. Does this new combination of ingredients more effectively convey the mood or character you want to communicate to the listener?

If yes, write the key ingredients down (to make it easier to remember), and then figure out what needs to happen for you to be able to produce this desired result consistently.

Egad!

Feeling overwhelmed? Is that a bit more intense than the typical 5-minute chunk of your practice sessions?

That's ok. As soon as you get into the habit of practicing this way and see how much more interesting and gratifying it is, you'll be hooked.

Plus, you also won't have to practice as long as you do now to notice positive results (Yay! More time for Angry Birds!). In fact, the literature on expertise suggests that there is little benefit from practicing more than 4 hours a day, and that gains begin to decline after the 2-hour mark.

Musicians weigh in

Not surprisingly, some of music's great historical figures have made recommendations that are strikingly similar to what the research suggests. [Eugène Ysaÿe](#), for instance, recommended 3 hours of practice per day, and [Leopold Auer](#) suggested 4 hours max. [Heifetz](#)



is said to have taken Sundays off, and violinist [Donald Weilerstein](#) has been known to encourage taking a 24-hour mini-break from one's instrument every week. Itzhak Perlman [suggests five 50-minute sessions, max](#).

What's wrong with practicing more? Nothing, *if* you can stay productive. You can certainly *play* or even rehearse far more than 4 hours a day, but being able to make gains and sustain the level of focus needed for deliberate practice is a different story. If you're fully engaged in deliberate practice, you'll find yourself feeling pretty tapped out both mentally and physically, and be hard pressed to sustain a high level of focus for much more than 4 hours. Besides, this is a marathon, not a sprint. In the same way that people lose weight most effectively when they adopt a lifestyle change rather than a crash diet, you want to have a practice regimen that is sustainable, day in, day out.

Ok, so let's get down to business. But first, a word of caution. Resist the temptation to radically transform your practice habits overnight. You'll be so wiped out, there will be nothing left in the tank for the next day. Again, aim for sustainable changes over time. Like in the parable about the [tortoise and the hare](#), slow and steady wins the race.

Oh - and one more thing

Do invest in a practice notebook. I recommend getting a notebook and pen so you can have a dedicated place devoted to collecting your thoughts, observations and notes about the valuable nuggets of wisdom and insights you are discovering in the practice room. Otherwise you'll forget, and it'll be 2 steps forward, 1 step back.

I'd encourage you to spring for something that you'll take pleasure in carrying around and writing in and keeping on your bookshelf for years to come (like the famed [Moleskine](#) variety, for instance), as this will make it more likely that you actually use it. And as a bit of a pen geek, I'm partial to [these](#) ultra fine-tipped pens that are such a pleasure to use that it makes you look for excuses to write things down.

Practice Hack #1

Learn more in less time by practicing at the right time of day



Practice when you're most productive

What are your most productive hours during a day? Are you a morning person? A night owl?

We all tend to experience certain peaks and valleys in our energy during the course of a day. Some have lots of energy in the morning, others find that their energy grows as the day progresses, but then they hit a wall around 3pm and are pretty much useless until 5pm.

Because deliberate practice is such an active mental process, trying to practice during low-energy periods results in a lot of wasted time and the development of bad sloppy habits that are going to require more time and energy to fix later.

Conversely, we can learn a lot more effectively and make a lot more progress (and be less frustrated) if we practice at times when our minds and bodies are naturally more alert and focused.

Create an energy log

Print out this [week-at-a-glance hourly calendar](#) and take a week to fill in how alert you are from hour to hour (say, on a scale of 1-10, where 1="I need a nap" and 10="I'm ready to go run a marathon").

Based on this chart, try to schedule practice time during your peak energy hours, and schedule grunt work, naps, chores, or exercise for those times when you don't have the energy to really concentrate and practice effectively.

Practice Hack #2

A simple strategy to make it easier to get off the couch and begin



Don't rely on willpower

For many, the hardest part of practicing is simply getting started. But rather than trying to increase one's willpower, and forcing oneself to practice, see if there's any way to make things easier and *reduce* the amount of willpower required (because willpower seems to be a limited resource).

As an example, one simple but helpful strategy is to keep your instrument out (somewhere safe, of course), so that if you should have the sudden urge to practice or try out a new way of approaching a phrase, you can pick up your instrument and begin playing immediately, instead of having to open your case, and spend 30 seconds getting everything set up.

Thirty seconds may not seem like much, but the extra effort it takes to get your instrument out of the case and put it back could be the little hurdle that represents the difference between practicing and not practicing.

You can learn more about the science behind mastering self-control [here](#).

Practice Hack #3

A strategy to increase your motivation to practice



Curiosity killed the cat

Remember the phrase “curiosity killed the cat?” Suspense can indeed be a very effective tool for motivating people to act. Season finale cliffhangers, for instance, can make it more likely for people to tune into the show the following season.

You see suspense every day in advertisements for the evening news as well, where they tease you with a few details about a can’t-miss segment or expose (or heck, the weather) and make you wait until the end of the show in order to see the thing they promised at the beginning. It doesn’t seem to matter that it’s almost never worth the wait; we can’t seem to help ourselves once we get a nagging question in our head.

We can use this principle to make it easier to get motivated to practice.

How to get back into deep practice mode quickly

I once read about a computer programmer, who made it a habit to break a piece of code before he took his lunch break. That way, when he returned from lunch, his first order of business would be to fix that piece of code. He found that this strategy of having a clear task to tackle, and a clear idea of how exactly to attack the problem, made it a whole lot easier to quickly get back into the flow of work.

Next time you’re getting close to finishing up a practice session, identify a problem area that you’d like to fix, and write down a few possible solutions to try - but do not allow yourself to try any of them yet!

Go take a break, and when you return from your break, *now* you can begin with this problem area and the potential solutions you already identified. You’ll find that the suspense created by this unfinished task not only makes it more motivating to return to the practice room, but easier to get back into the flow of practicing as well. Learn more about the science behind this [here](#).

Practice Hack #4

Get motivated and get more done in less time



Practice Sprints

In a related vein, the next time you find yourself drifting into autopilot mode, or are feeling resistant to practicing for a full session, try a practice sprint.

This is helpful because we tend to be much more productive in short bursts. Also, we are more effective when we have clearly defined problems to solve.

This is also helpful if you have a tendency to get sucked into one of those practice black holes where you obsess over a single note or phrase, and the next thing you know, an hour has gone by with little to show for it.

Hint: In general, you will likely find that 45-minute or shorter practice sessions are more effective than practice sessions longer than an hour. Why? It's easier to maintain a high level of intensity and focus when we know in advance that we only have to do it for a short time. But this is about sprints, so let's start by experimenting with an 8 or 10-minute interval.

Practice Sprints

- ☐ **1. Set a timer for 10 minutes**
This is important - being able to see the timer counting down really helps you stay on task.
- ☐ **2. Define a specific goal that you'd like to accomplish**
For instance, cleaning up intonation in a short phrase, working out a more effective fingering, or finding a more convincing way of playing a particular section. Write the goal down to force yourself to define it in very specific terms. That way it'll be easy to know if you've accomplished it or not.
- ☐ **3. Do what it takes to accomplish your goal**
When 10 minutes are up, write down what you have learned.
- ☐ **4. Rinse & repeat**
Go back to step 1 and repeat as desired

Practice Hack #5

The easiest way to be more productive in the practice room



Three-minute attention span

A recent study found that students could only stay on task for an average of three minutes at a time. As you might expect, those who were able to stay on task longer tended to be better students.

Interestingly, it didn't matter how many times a student checked Facebook in a 15-minute span. Just checking *once* was correlated with being a worse student.

This might be explained by the fact that it's not just the beep or alert of an incoming text that is distracting. It's the voice in your head that wonders if people have responded to your witty Facebook status update. Or whether so-and-so read your text about dinner. Or what fun thing is happening right now that you might be missing.

There are two problems with this.

One, you're not practicing deliberately; your mind is elsewhere while you merely go through the motions. Which means you aren't being as effective in your problem-solving as you could be. It also means that you could be creating bad habits that may sneak up on you at the worst possible time.

But the biggest problem is a little more subtle. Consider that your ability to concentrate and stay focused for extended periods of time is a key performance skill that you'll need in order to play your best in recitals, competitions, auditions, and in long orchestral performances - from the first note to the very last. Well, what do you think will happen on stage, if you essentially practice zoning out and being sort of absent mentally when you're practicing? Unfocused practice deprives us of a tremendously valuable opportunity to develop "attentional endurance"; the ability to stay focused for long periods of time.

There is no such thing as a Facebook emergency

Make it easier for yourself to focus on your practice session and the agenda you've laid out. Put your phone in a different room and turn it off. That way it takes a little while to boot up, making it less likely that you'll turn it on in the middle of practicing. After all, when was the last time someone notified you of something that qualified as an emergency via Facebook? Or the last time you received any sort of notice via your phone that couldn't wait an hour or two?

Try making some sort of deal with yourself where you are only allowed to check your phone at certain times if you've been productive. Something like, you can log onto Facebook only after you've gotten two solid practice sessions in.

Practice Hack #6

Maximize your efficiency by setting limits on practice time



What is Parkinson's Law?

Productivity-obsessed folks often talk about a phenomenon called Parkinson's Law which is extracted from the first sentence of a humorous essay published back in 1955 by a British historian.

Parkinson's law states that “**work expands so as to fill the time available for its completion.**”

In other words, if we have a week to complete a paper, the paper will take a week to write. On the other hand, if we only have 24 hours to write the same paper, it'll get written in 24 hours.

Likewise, if we have all afternoon to practice, we'll spend the whole afternoon practicing. You'll get things accomplished, just not in the most expeditious way possible.

Hacking practice time

Let's say you were only allowed to practice two hours today. What would you spend your time on? How would the intensity of your focus change? What shortcuts or strategies would you develop to ensure that you make the most of your time? What decision rules would you create to avoid getting too bogged down in details that don't represent the most effective use of your time and energy?

People often say that when they've been forced to practice less due to an injury, they become more productive and find a way to get more done in less time. Many musicians also discover that having a baby forces them to be much more productive with their practice time as well.

Get more done by practicing less

Rather than getting injured or having a baby, why not train yourself to hack your practice room efficiency by limiting your practice time for a week? Set

a daily practice time limit that you are not allowed to exceed - say, 50-75% of the amount of time you normally spend practicing. Set a timer for the total amount of time you're allowed to practice for the day, and see what happens if you go into your day with a clearer plan, more specific objectives, and a determination to be productive with every single minute of your time.

Some find it helpful to keep the timer somewhere visible, so you can see every single precious minute of practice time slowly tick off the clock. But others find it incredibly stressful and distracting, so you might just have to try it for a few days and see how you respond.

Practice Hack #7

Cycle through your repertoire in multiple passes to make the most of your time



Remember that time and energy are limited

It may be true that heaven is in the details (or the devil is in the details?), but then again it can be easy to get so bogged down in microscopic details, that hours of valuable time are lost to perfecting a single note or phrase. There's nothing wrong with spending a lot of time getting the details just so, except if we are doing so at the expense of other important and critical aspects of our playing.

I remember preparing the Bach Chaconne for a competition, and getting so obsessed with intonation, that I spent weeks working through just the first few lines. Meanwhile, there were a whole range of other issues that were being neglected (e.g. voicing, shaping line, pacing, tone color, not to mention memorization and the rest of my repertoire). I had to force myself to stop obsessing, zoom out a bit, and identify what was going to give me the most bang for my buck.

So how do we avoid this perfectionist trap?

Iterative practice.

What's that?

An iterative process

Remember when your parents wouldn't let you go out and play until you had cleaned up your room?

You probably started by cleaning up the most obvious stuff first. Clothes on the floor, books that ought to be on a shelf, a stale pizza crust or two. If that failed to garner your parents' stamp of approval, you moved on to things like organizing your desk. And if your parents' expectations still weren't met, you kicked it up another notch, and so on, until your parents finally relented and let you leave. This was an iterative process. You cycled through

your room multiple times, taking care of increasingly finer details on each pass or iteration.

Here's one example of an iterative model for prioritizing practice time.

Iterative Practice Model

Plan on working through a piece in multiple passes (or iterations), by surveying the current state of a piece and creating practice goals and objectives at several different levels. For instance:

30,000 feet (big picture basics)

20,000 feet (finer details, but still relatively obvious things)

10,000 feet (more picky details)

ground level (nitpicky microscopic stuff)

Ensure that you are taking care of the higher altitude stuff as well as the lower altitude details.

One of my teachers used a pyramid to graphically represent iterative practice. Foundational elements were at the base, and ultra fine details at the very top.

Another teacher described it as a series of filters, each one finer than the next.

Things may not end up being as neat and tidy and linear as the plan you start out with, but this prioritizing in this way will help keep you from losing track of time and fixating on minor details at the expense of major ones.

Practice Hack #8

The single most important page in the strategy guide

Problem Solving Practice Model #1

What does deliberate practice look like? Here's a 6-step problem-solving model.

Problem Solving Practice Model #1

1. **Define** the problem: *What do I want this note/phrase to sound like?*
2. **Analyze** the problem: *What is causing it to sound like this?*
3. **Identify** potential solutions: *What can I tweak to make it sound more like I want?*
4. **Test** potential solutions: *What tweaks seem to work best?*
5. **Implement** the best solution: *Make those tweaks permanent*
6. **Monitor** implementation: *Are these tweaks continuing to get me the results I want? Or do they need to be refined?*

Problem Solving Practice Model #2

Want an even simpler formula? Try this (from [*The Talent Code*](#) by Daniel Coyle).

Problem Solving Practice Model #2

1. **Pick** a target
2. **Reach** for it
3. **Evaluate** the gap between the target and the reach
4. **Return** to step one

If you've not yet read [*The Talent Code*](#), it's well worth picking up. Coyle's [blog](#) is also a great read, with helpful, often inspiring, and easy to consume articles like this one: [3 Rules of High-Velocity Learning](#).

Take a Break!

Reward yourself for a day of productive practice

Lindsey's Pumpkin Chocolate Chip Bread

I got this recipe from a friend in graduate school, to which I developed a bit of an addiction (the bread, not the friend). I don't make this every week anymore, but the smell of pumpkiny chocolatey goodness filling up the house on chilly fall days is still as awesome as it ever was.

What does this have to do with performance psychology? Well, it's important to reward and reinforce positive behavior changes. And besides, it's just awfully darn yummy, and after a week of deliberate practice you deserve a break.

Lindsey's Pumpkin Chocolate Chip Bread

Ingredients

3 1/3 cups flour

3 cups sugar

4 tsps pumpkin pie spice

2 tsps baking soda

1 tsp salt

1/2 tsp baking powder

4 eggs

1 can (15oz.) pumpkin

2/3 cup water

2/3 cup canola oil (or vegetable oil)

2 cups semi-sweet chocolate chips (chunks work too)

Instructions

Mix dry ingredients together and set aside.

Mix wet ingredients together, and combine with dry ingredients.

Stir in chocolate chips.

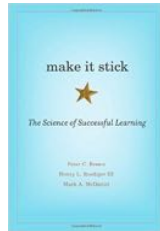
Grease and flour two loaf pans.

Pour half of batter into each pan.

Bake at 350°F for 70-75 minutes. It's done when a toothpick inserted comes out clean. It depends on your oven, but it usually takes me more like 85-90 minutes before the bread is done.

Turn It Up To 11 *Not sure what this means? [Click here.](#)

Take another step forward with these additional resources

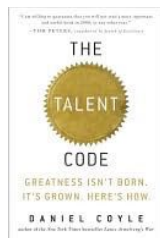


Make It Stick: The Science of Successful Learning

by Peter Brown, Henry Roediger, and Mark McDaniel

Honestly, the title says it all. It turns much of what we thought we knew about studying and practicing upside down, and I guarantee it will change how you study, practice, and teach. I think it's a must-read for everyone, and I bet you'll find yourself recommending it to other people as well by the time you're done reading it.

Also available as: [Kindle](#) | [MP3](#) | [CD](#)

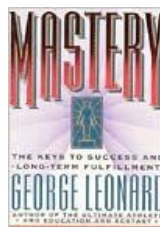


The Talent Code

by Daniel Coyle

My favorite non-academic book on the talent and expert performance literature, The Talent Code explains the concept of deliberate practice, why it's so critical, and what happens inside our brains when we engage in the right kind of practice. With lots of stories from education to sports to music (Meadowmount and a few specific musicians get a nod), it's also an entertaining and inspiring read.

Also available as: [Kindle](#) | [MP3](#) | [CD](#)



Mastery

by George Leonard

Modern society predisposes us to be seduced by the allure of instant gratification and the quick fix. But as [Beverly Sills](#) once said, "*There are no shortcuts to any place worth going.*"

This classic book will inspire you to want to pursue the path of mastery (vs. seeking the quick fix). It explains the nature of practice and skill development and via its explanation of practice plateaus, will give you the patience to continue to work at something - even on days when it seems like no progress is being made.

So...what do I do about nerves?

The other half of practice that we tend to neglect

I hope that deliberate practice and the other strategies in this guide have helped to make “good” practice days more commonplace (those days when you walk out of the practice room feeling like you made real progress, and everything feels right in the world).

But you may still find that nerves creep up on you, and cause performances to be hit or miss. Well, there’s a reason for this.

The short of it is that everything we talked about in this guide relates to one very specific category of practice - practicing for skill development. And while deliberate, focused, practice is the best way to achieve this, it’s not necessarily the best way to prepare for performances.

Why? Because deliberate practice is about problem-solving. Analysis. Detailed critique. All of which requires that we carefully monitor our playing and stop anytime we hear something that sounds off.

But consider what we have to do in performances. We have to create, let go, play freely, disregard any imperfections, and trust that we can nail the tricky shift without thinking about the intricate mechanics and timing. In other words, we must adopt a mindset that is almost the exact opposite of what we do in the practice room.

This requires a very different kind of practice, much of it mental, rather than physical. Indeed, elite athletes have geared their practice around mastering not just the physical skills necessary for performing well, but a whole set of *psychological* skills as well.

So if you’ve had this nagging feeling that you’re capable of much more inspired and confident playing, but haven’t figured out exactly how to do so when it counts, don’t worry! That’s perfectly normal - and has nothing to do with talent or some innate “performer” gene. It’s just that most of us have never learned how to practice specifically for performance.

If this is something you’d like to learn, I think you’ll like [**Beyond Practicing**](#). It’s a complete home-study course modeled after the live courses I teach at Juilliard, and contains the most

effective techniques that thousands of musicians around the world have used to conquer nerves, win auditions, and ultimately, walk off stage feeling great about the performance.

Take a few seconds to check out the [course description](#) and see if it's right for you. If you have any questions, feel free to email me at noa@bulletproofmusician.com.

In the meantime, happy practicing!

A handwritten signature in black ink, appearing to read 'Noa Kageyama' in a stylized, cursive script.

Noa Kageyama, Ph.D.